

Work Order ID 59887

Tuesday, June 15, 2010 4:03:45 PM

Page 1

Item ID: D407-667-205

Accept

Setup Start

Revision ID:

Stop

Item Name: Crosstube Aft

Start Date: 6/15/2010 Start Qty: 1.00

Cust Item ID:

Required Date: 6/22/2010 Req'd Qty: 1.00

Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr

Revision Nbr

D407-667-245

Rev F

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D407-667-205 CHG006

S.10/08/05

J.10/08/05 BG 10-8-25

110

0.00



Pick Kit

Packaging

Packaging

Memo

0.00

Packaging

D.10/08/05

10-8-3

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

1-Bend tube as per Dwg D407-667-245 using CNC bender program 407 Aft and Folio FT

D.10/08/05

10-8-3

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Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

130

QC15- Crosstube Dimensional Check

0.00

QC

Memo

0.00

Quality Control

8/10/08/04

(40)

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Item ID: D407-667-205

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Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill pilot holes in tube using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill all (3) top holes.

2-Drill and Ream all holes in tube to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Check dimensions between holes on all four sides.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8583 & DT8584 as per Dwg D407-667-245. Drill only the top (2) holes.

5-Drill & ream the top (2) holes to finish size using drill Jig DT8583 & DT8584 as per Dwg D407-667-245

6-Drill Aft rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Note: Aft side has 3x top holes.

7-Drill Fwd rivet holes using drill Jig DT8789 as per Dwg D407-667-245. Drill only the top (3) holes.

8-C'sink holes as per Dwg D407-667-245. Allow rivet to sit below surface to compensate for paint.

9- Scribe tube to identify on the inner chamfer in the cuff D# and B#

10-Debur & Inspect for surface damage. Repair damage within limits as per

MS / ARM
10-08-09

MS
10-08-09

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Item ID: D407-667-205

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Customer:

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Dwg D407-667-245

150

Crosstubes Chemical Conversion

0.00



HandFXtube

Memo

0.00

Hand Finishing Crosstubes

(IX) 2 10-08-09

160

QC3- Inspect Part Finish

0.00



QC

Memo

0.00

Quality Control

8/10/08/09

170

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8/10/08/09

FD

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Reference:

Cust Item ID:

Customer:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

180	Outsource process - NDT per QSI038 4.1	0.00							
-----	--	------	--	--	--	--	--	--	--



Outsource2

Memo 0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 0380
Issue P/O: 12394 LPI as per ASTM 1417
Level 2 Attach copy of NDT results to work order

CZ 10/8/12 ①

190		0.00							
-----	--	------	--	--	--	--	--	--	--



Packaging

Packaging

Memo 0.00

Packaging

Ensure copy of NDT results attached to work order.

CZ 10/8/12 ①

200	QC5- Inspect part completeness to step on W/O	0.00							
-----	---	------	--	--	--	--	--	--	--



QC

Memo 0.00

Quality Control

ZT 10-08-16 (Y1)

Work Order ID 59887

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Item ID: D407-667-205

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Setup Start



Revision ID:

Stop



Item Name: Crosstube Aft

Start Date: 6/15/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/22/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210		0.00							
	SprayPaint								
SprayPaint	Memo	0.00							
Spray Painting	1-Prime inside and outside crosstube as per QSI 005 4.2 2-Paint outside crosstube with White Imron as per QSI 005 4.2 PRIME: Start Time: <u>10:00</u> Finish Time: <u>11:00</u> PAINT: Start Time: <u>3:00</u> Finish Time: <u>4:00</u>								
220	QC14- Inspect Spray Paint	0.00							
QC	Memo	0.00							
Quality Control	Then, Wrap in plastic bag to protect from scratches								

21 10-08-16ml 18 08 17 (1)

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Item ID: D407-667-205

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 6/15/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/22/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start



Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00



Crosstubes

Crosstubes

Memo

0.00

1-Install abrasion strips as per QSI 035 using DT8674. Install chafing shield as per Dwg D407-667-245. Note: (3) top holes should be facing up.

2- Lightly scuff the bonded area using a 320 grit sand paper and clean the area with 41058 wash 'n' wipe

3-Install support with magnobond and install clamps as per Dwg D407-667-245 using installation jig DT9025. Torque clamps to 80-100 in lb

A/R Magnobond

Batch: 114158

EXP: 11-08-03

4-Install nut plates as per Dwg D407-667-245. Touch-up rivet heads with Imron paint.

RT 10-08-17

240

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

S 10/08/24

(40)

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Item ID: D407-667-205

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 6/15/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 6/22/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

10/18/24 SF

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

Subsbr

20

270

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and in kanban rack
Location: SS

Roe

10/18/25

SF

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Start Date: 6/15/2010 Start Qty: 1.00

Required Date: 6/22/2010 Req'd Qty: 1.00

Reference:

Cust Item ID:

Customer:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/08/27 *[Signature]*
cmf
10-825

Picklist Print

Tuesday, June 15, 2010 4:03:50 PM

Page 1

Work Order ID: 59887

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft



Start Date: 6/15/2010

Required Date: 6/22/2010

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev:C05.09.02 Add holes for compatibility with Bell Skidtubes KJ/JLM
IPP Rev:D Added Magnobond,Rubber Cushion & Clamps 07-02-19
JLM

****CHANGE TO CHG 005 - IF USING D2894-1 B35578 OR GREATER****

IPP Rev:E 08-05-22 add comment in seq. 6 and QC15 and QC5 DD verified by:EC

IPP Rev:F 08-06-12 add comment in seq. 24 DD verified by:EC

IPP Rev:G 08-08-19 revE as per dwg DD verified by:EC

IPP Rev H 09.01.06 ECN 08-562 EC verified by:DD IPP Rev:I

10.04.07 revise route seq. in bom DD verified by:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D407-667-205TRN 		Manufactured	No			110	Each	2.0000	1	1			
Crosstube Turning Detail													

Location	Loc Qty	Loc Code
LG	2	
58389	1	
58390	1	

DP 10-8-3

AN960JD516 NAS1149D0563J Purchased No



Washer

D2856-400



Abraison Strip

Location	Loc Qty	Loc Code
ST403	240.9888	
50593	43.4568	
56626	197.532	

18 18
M114742 10/8/24 SP

1.288 1.355789
ST 10 '08-24

x 1.288

Picklist Print

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Page 2

Work Order ID: 59887

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Start Date: 6/15/2010

Required Date: 6/22/2010

Start Qty: 1.00

Required Qty: 1.00

D2873-043 Manufactured No 230 Each 48.0000 2 2
Nut Plate Assembly
BT 10 08 24

Location	Loc Qty	Loc Code
LG	48	
53966	20	x2
56466	8	
57337	20	

D2873-045 Manufactured No 230 Each 44.0000 2 2
Nut Plate Assembly
BT 10 - 08 - 24

Location	Loc Qty	Loc Code
LG	44	
53967	5	
53968	20	x2
57336	19	

D2894-1 Manufactured No 230 Each 19.0000 1 1
2.750 Support
BT 10 - 08 - 17

Location	Loc Qty	Loc Code
LG	19	
43713	5	
43881	14	x1

D3190-1 Manufactured No 230 Each 36.0000 2 2
Chafing Shield
BT 10 - 08 - 24

Location	Loc Qty	Loc Code
LG	36	
47456	16	x2
58569	20	

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Shop Packet Print

Page 2

Picklist Print

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Page 3

Work Order ID: 59887

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Start Date: 6/15/2010

Required Date: 6/22/2010

Start Qty: 1.00

Required Qty: 1.00

D3595-063-450

Manufactured

No

230

Each

74.9790

2

2



RUBBER CUSHION



RT 10-08-17

Location

Loc Qty

Loc Code

LG

74.97897368

53775

5.97897368

58161

24

59580

45

MS20601-AD4W8

Purchased

No

230

Each

342.0000

14

14



RIVET



RT 10 08 24

Location

Loc Qty

Loc Code

ST322

342

108521

98

112203

244

MS21920-22

Purchased

No

230

Each

118.0000

4

4



Clamp(per MIL-DTL-8783C)



RT 12 08 -24

Location

Loc Qty

Loc Code

LG

118

111210

19

114077

99

RT X3

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Page 4

Work Order ID: 59887

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Start Date: 6/15/2010

Required Date: 6/22/2010

Start Qty: 1.00

Required Qty: 1.00

MS21920-25

Purchased

No

230

Each

120.0000

2

2



Clamp(per MIL-DTL-8783C)



85 10-08-17

Location

Loc Qty

Loc Code

LG

75

113281

0

114759

50

114901

25

ST451

45

113281

5

113282

18

113744

1

114141

21

AN5-10A

Purchased

No

260

Each

153.0000

10

10



Bolt



10/8/245

Location

Loc Qty

Loc Code

ST337

153

114199

52

114227

1

114752

100

AN5-32A

Purchased

No

260

Each

178.0000

4

4



Bolt



10/8/245

Location

Loc Qty

Loc Code

ST340

178

113121

28

114056

100

114405

50

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Page 4

Picklist Print

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Work Order ID: 59887

Parent Item: D407-667-205

Parent Item Name: Crosstube Aft

Start Date: 6/15/2010

Required Date: 6/22/2010

Start Qty: 1.00

Required Qty: 1.00

AN5-34A

Purchased

No

260

Each

104.0000

4

4

Bolt

Location

Loc Qty

Loc Code

ST340

104

113149

54

113226

50

MS21042L5

Purchased

No

260

Each

715.0000

4

4

Nut

Location

Loc Qty

Loc Code

ST139

500

114813

500

ST300

215

114449

215

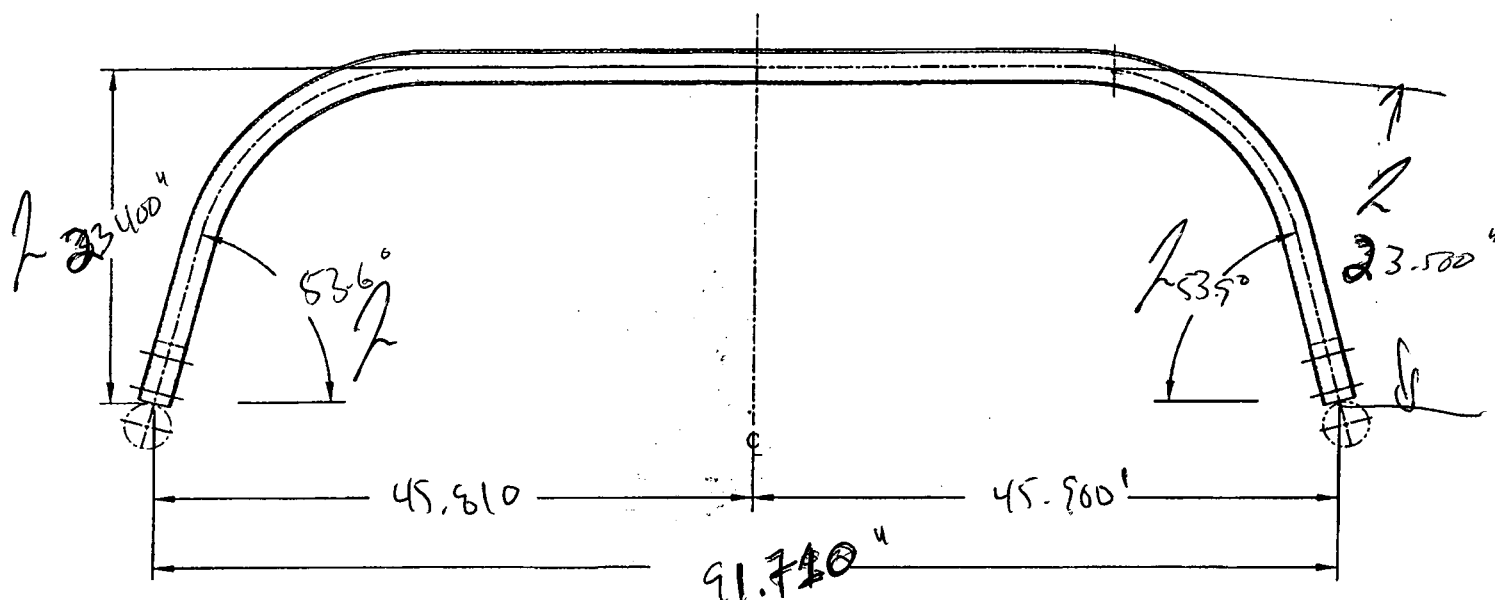
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Shop Packet Print

Page 5

DART AEROSPACE LTD	Work Order:	59887
Description: Crosstube High Aft (407)	Part Number:	D407-667-205
Inspection Dwg: D407-667-245 Rev: F		Page 1 of 1

Required Dimension	Min	Max
Height	23.46	23.58
1/2 Span	45.86	45.98
Angle	54	56
Total Span	91.72	91.96



Comments

QC15 Inspection	8
Date	10/08/04

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.22	Dwg Rev updated	KJ	

Item	QTY -245	PART NUMBER	DESCRIPTION
1	X	D407-667-245	CROSSTUBE ASSEMBLY (407 HIGH AFT)
2	1	D6011-115	CROSSTUBE
3	2	D2856-400-773	ABRASION STRIP
4	2	D2873-043	NUT PLATE
5	2	D2873-045	NUT PLATE
6	1	D2894-1	SUPPORT
7	2	D3190-1	CHAFING SHIELD
8	2	D3595-063-430	RUBBER CUSHION
9	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
10	4	MS21920-22	CLAMP
11	2	MS21920-25	CLAMP (OR MS21920-24)
12	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947- 100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

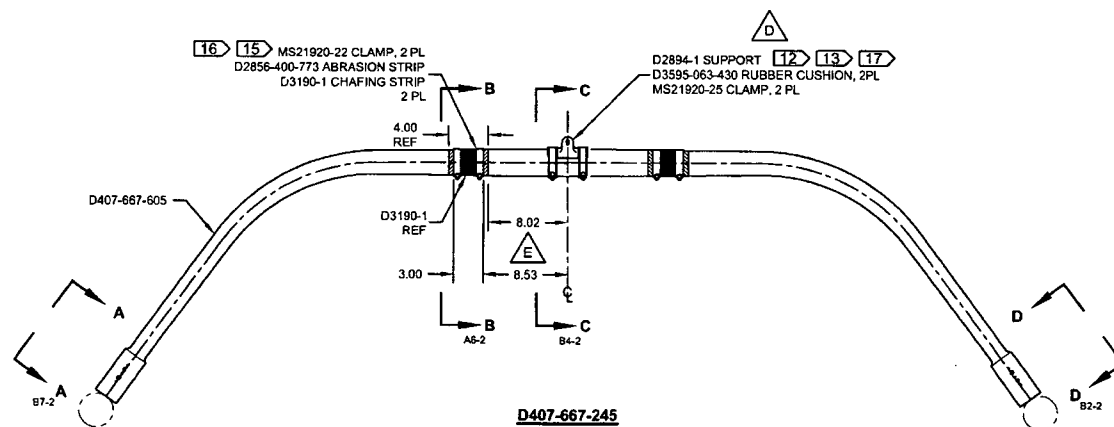
- MATERIAL: MANUFACTURED FROM D6011-115
FINISHED LENGTH = 112.91±0.020
- FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- UNITS: INCHES UNLESS OTHERWISE NOTED.
- BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-245" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- WEIGHT: 27.7 lbs
- PART IS SYMMETRIC ABOUT CENTERLINE.
- RUN-OFF PART. BLEND OUT EDGE LONGITUDINALLY. TRANSITION SHOULD BE SMOOTH.
- BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- INSTALL D2894-1 CENTER SUPPORT USING A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- INSTALL MS21920-25 CLAMPS WITH D3595-063-430 RUBBER CUSHIONS TO SECURE D2894-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
NOTE: MS21920-24 CLAMPS CAN BE USED TO ACCOMMODATE VARYING DIAMETERS. ENSURE THERE IS A MINIMUM OF 1.5 THREADS IN SAFETY ON THE NUTS.
- EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- INSTALL D2856-400-773 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE, PER QSI 035.
- INSTALL D3190-1 CHAFING SHIELDS SO THAT OVERLAP IS ON BOTTOM SIDE OF CROSSTUBE OPPOSITE D2894-1 SUPPORT.
- TORQUE CLAMPS 80 TO 100 IN.-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 59887

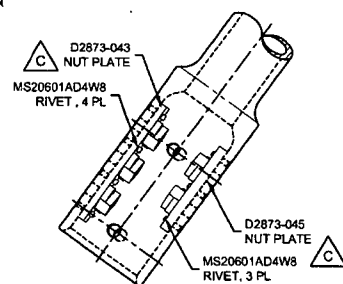
PS 10-6-15

RELEASED
8/11/12

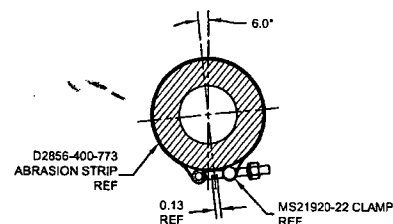
F	REFORMAT NOTES TO NEW STANDARDS (ZN B8-1); RELOCATED FLAG # 6 (ZN A8-3) PER NCR 210; REMOVED REF. & ADD TOLERANCES (ZN C6-3, C4-3 & D2-3)	RF	08.11.06
E	8.02 AND 8.53 WERE 8.40 AND 8.90 (ZN D5-2); REORGANIZED VIEWS AND REFORMATED DRAWING TO CURRENT STANDARDS. REASONS: CLAMPS MOVED 0.375 TOWARD CL TO ELIMINATE INTERFERENCE WITH AIRCRAFT MOUNTS. REFERENCE: PAR#08-21 AND ECN#1225	MB	08.07.24
D	ADD VIEW FOR OEM SKID HOLES, ROTATE ORIENTATION OF CLAMPS SECTION F-F, REMOVE -851 ABRASION STRIP, ADD MAGNOBOND 6398, ADD CUSHION	PH	07.02.07
C	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT/AA SKIDTUBES	PH	05.07.26
B	ADD CHAFING SHIELD	CP	03.05.21
A	NEW ISSUE	CP	02.05.13
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>qf</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. REV. F D407-667-245 SHEET 1 OF 4 TITLE SCALE CROSSTUBE ASSY (407 HIGH AFT) NTS <small>COPYRIGHT © 2002 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	
DRAWN	RF		
CHECKED	<i>qf</i>		
MFG. APPR.	<i>qf</i>		
APPROVED	<i>qf</i>		
DE APPR.	<i>qf</i>		
DATE	08.11.06		



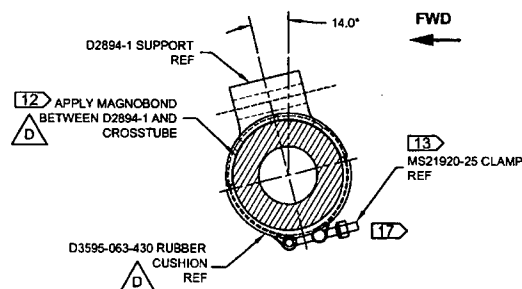
D407-667-245
ASSEMBLY DETAIL
(VIEW LOOKING FWD)



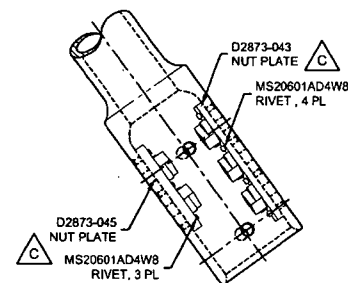
C7-2 **VIEW A-A CUFF DETAIL**
SCALE 4X



FWD
C5-2 **SECTION B-B**
SCALE 4X, 2PL



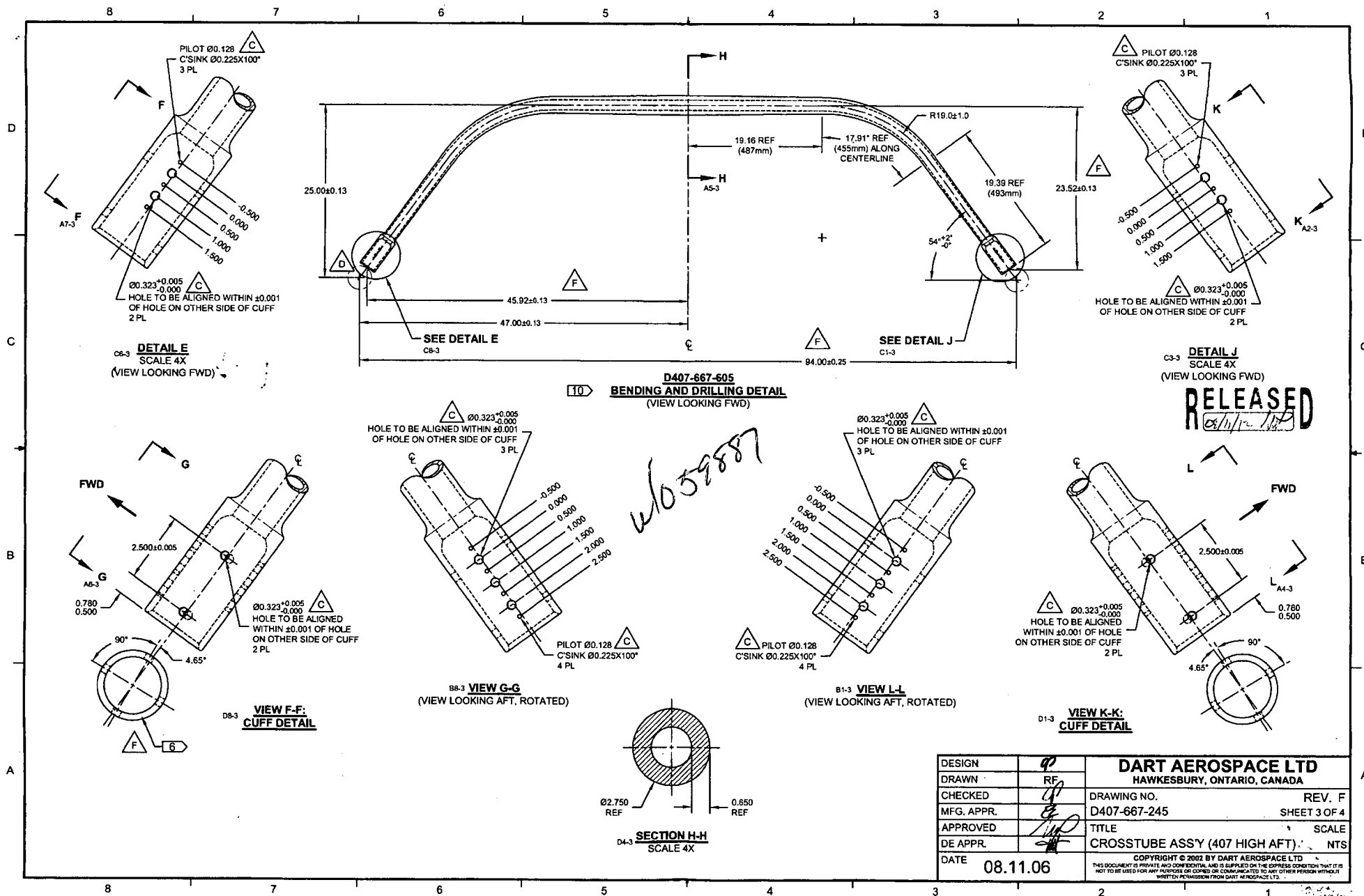
C4-2 **SECTION C-C**
SCALE 4X



C2-2 **VIEW D-D CUFF DETAIL**
SCALE 4X

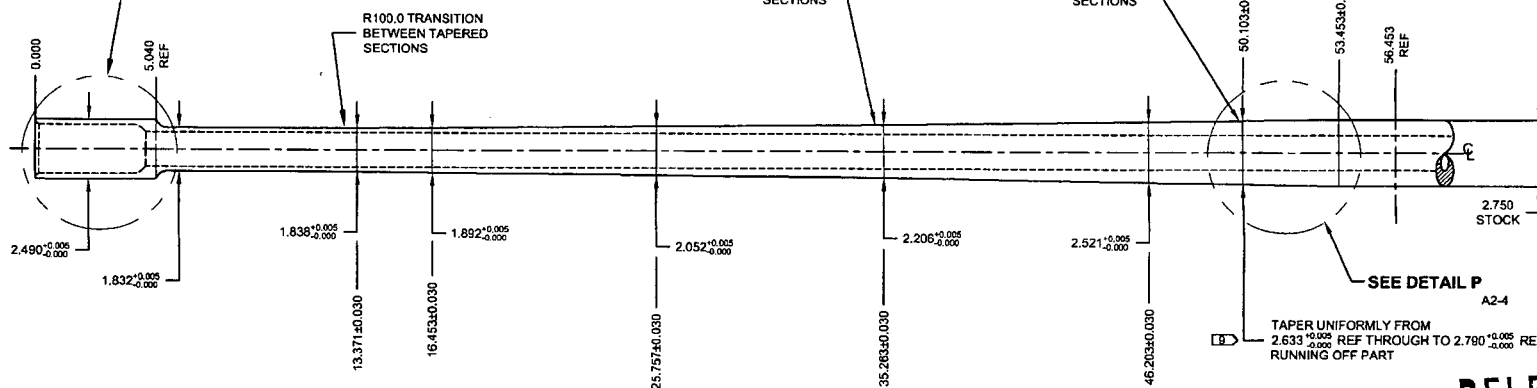
RELEASED
02/11/12

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	RF	DRAWING NO.	REV. F
MFG. APPR.	RF	D407-667-245	SHEET 2 OF 4
APPROVED	RF	TITLE	SCALE
DE APPR.	RF	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
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MFG. APPR.	EP	D407-667-245	SHEET 3 OF 4
APPROVED	SA	TITLE	SCALE
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SEE DETAIL M
A7-4

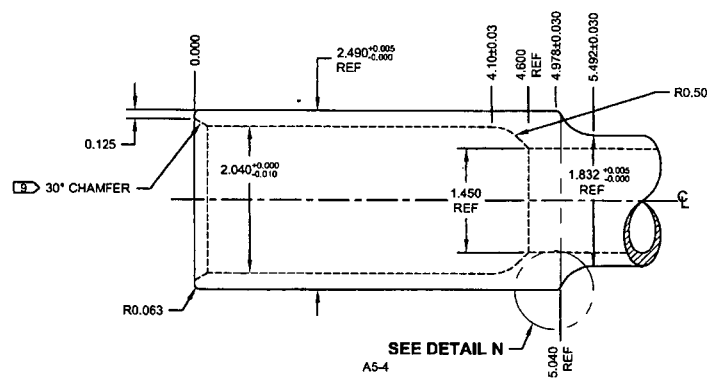


SEE DETAIL P
A2-4

TAPER UNIFORMLY FROM
2.633 (+0.005/-0.005) REF THROUGH TO 2.790 (+0.005/-0.005) REF
RUNNING OFF PART

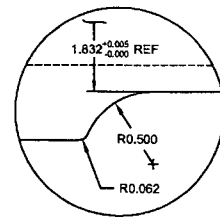
D407-667-245 MACHINING DETAIL

RELEASED
08/11/12 JMB

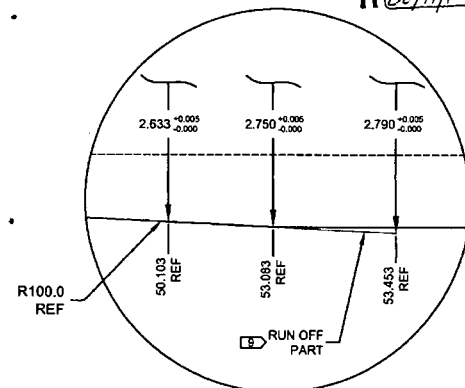


SEE DETAIL N
A5-4

DETAIL M: CROSSTUBE CUFF
SCALE 3X



DETAIL N: CUFF TRANSITION
SCALE 2X



DETAIL P: TAPER RUN-OFF
NOT TO SCALE

al059887

DESIGN	90	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	90	DRAWING NO.	REV. F
MFG. APPR.	90	D407-667-245	SHEET 4 OF 4
APPROVED	90	TITLE	SCALE
DE APPR.	90	CROSSTUBE ASS'Y (407 HIGH AFT)	NTS
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LIQUID PENETRANT TEST REPORT

P- 05489

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/WO NO.

WORK LOCATION

ACCEPTANCE STD.

PAGE

OF

TIME

AM

PM

DART AEROSPACE
LINDA KACEL/CHANTINE LIAW
1270, ABERDEEN
HAWKESBURY ON

AUG 11/2010
138-10-0795

AS ADDRESS

ASTM1412/451-03B REV./DATE 2005

W.F.P.T. ON 6 X CROSS TUBES

SEE W.O.# BELOW IN RESULTS

JOB DESCRIPTION

PROCEDURE NO. LT-002 REV./DATE 2008

TECHNIQUE NO. LT-002 REV./DATE 2008

PART NO.

MATERIAL

THICKNESS

SCOPE

TEST DETAILS

METHOD

☒ FLUORESCENT☐ VISIBLE☒ WATER WASH☐ SOLVENT REMOVABLE☐ POST EMULSIFIED

FAMILY BRAND

MAGNAFLUX

BLACK LIGHT S/N

13798

OUTPUT > 1000 μ W/cm²☐ AMBIENT < 2 fc

PENETRANT

ZL-67

MINIMUM DWELL TIME 10 MIN.

LIGHTING EQUIP.

☐ FLASHLIGHT☐ TROUBLELIGHT☐ OUTPUT > 100 fc @ SURFACE

PENETRANT REMOVER

H2O

MINIMUM DRY TIME > 10 MIN.

OTHER

DEVELOPER

SKD-52

MINIMUM DWELL TIME 10 MIN.

LIGHT METER S/N

CAL DUE DATE

DEVELOPER TYPE

☐ NON AQUEOUS☐ AQUEOUS☐ DRY

TEST SURFACE

SURFACE CONDITION

☐ AS GROUND☐ AS WELDED☐ MACHINED☐ SHOT BLASTED☒ CLEAN BARE METAL

SURFACE TEMPERATURE

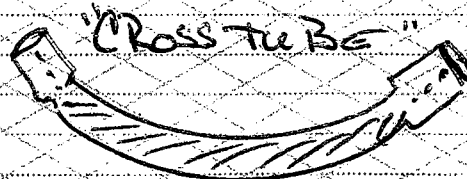
☐ < -4°C/ 20°F☐ -4°C/ 20°F TO 10°C/50°F☒ 10°C/50°F TO 52°C/125°F☐ > 52°C/125°F

RESULTS-

☐ METRIC ☒ IMPERIAL

ITEM #	COMMENTS	ACCEPT	REJECT
1	CROSS TUBE - W.O. ID 59887	✓	✗
2	CROSS TUBE - W.O. ID 59888	✓	
3	CROSS TUBE - W.O. ID 61074	✓	
4	CROSS TUBE - W.O. ID 61075	✓	
5	CROSS TUBE - W.O. ID 60258	✓	
6	CROSS TUBE - W.O. ID 60259	✓	

ITEM ID: - D407-667-25 (ITEM# 1 & 2)
ITEM ID: - D212-664-101 (ITEM# 3 & 4)
ITEM ID: - D212-664-107 (ITEM# 5 & 6)



RT 10-08-16

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE

TECHNICIAN (SIGNATURE):

NAME (PRINT):

John Titley

PRINT

SIGNATURE

DTR # E48667

REPORT

REVIEWED BY:

NAME

INITIALS

1ST TECHNICIAN

CGSB LEVEL 2 SNT LEVEL 2

CGSB REG. NO. 344

2ND TECHNICIAN

CGSB LEVEL SNT LEVEL

CGSB REG. NO.

WHITE - CLIENT COPY

CANARY - OFFICE COPY

PINK - TECHNICIAN COPY

GOLD - OFFICE COPY

PT-8